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RESEARCH REPORT

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Private Contributions Towards the Provision of Public Goods: The Conservation of Thailand's Endangered Species

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This paper looks at why people in Bangkok give money to wildlife charities, estimates how much people would be willing to pay for the conservation of some of Thailand's endangered animals and assesses what would be the best way to collect money for wildlife protection.

The study was carried out by Orapan Nabangchang from the Sukhothai Thammatirat Open University. She used the Contingent Valuation Method (CVM) to determine the economic value of a group of Thailand's endangered animal species. Information was gathered through 955 face-to-face interviews conducted in Bangkok. Her study finds that the majority of the respondents would vote to pass a referendum to impose a 250 Baht income tax surcharge to generate funds for conservation of a selected group of Thailand's endangered species.

If this surcharge were imposed on the whole of Bangkok's population, it would raise significantly more money than is allocated to the current budget of Thailand's National Park, Wildlife and Plant Conservation Department. This potential income would allow the implementation of a comprehensive, integrated conservation programme across the country. The study therefore recommends that all policy-makers and organizations involved in wildlife conservation in Thailand seriously consider its findings and incorporate them in future plans to raise funds to save the country's endangered wildlife.

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EEPSEA was established in May 1993 to support research and training in environmental and resource economics. Its objective is to enhance local capacity to undertake the economic analysis of environmental problems and policies. It uses a networking approach, involving courses, meetings, technical support, access to literature and opportunities for comparative research. Member countries are Thailand, Malaysia, Indonesia, the Philippines, Vietnam, Cambodia, Lao PDR, China, and Papua New Guinea.

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There have contributions from many others whom I would also like to express my appreciation towards: my research assistants, the people who participated in the Focus Group Discussions, those who provided comments at the seminars where the findings were presented, and finally, the respondents who contributed their time for the interviews.

I hope that this report reflects the valuable contributions of all I have named and that the findings of this study will benefit the ongoing efforts to save many of the endangered species facing the risk of extinction.

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ABSTRACT

The study explored the issue of private contributions towards the provision of public goods. The Contingent Valuation Method (CVM) was employed to determine the economic value of a group of Thailand's endangered animal species with 955 face-to-face interviews conducted in Bangkok. The study explored the differences between mandatory and voluntary payment mechanisms and examined responses to fundraising campaign incentives such as seed money and refund options. The results indicated that there was a higher probability of positive responses to the Willingness to Pay (WTP) question under the mandatory rather than the voluntary payment mechanism. However, seed money and refund features did not increase the probability of willingness to pay.

1.0 INTRODUCTION

Endangered species, as environmental goods, consist of both use and non-use values. The direct economic benefits or direct use values can be extractive such as hunting and angling, or non-extractive as in the case of eco-tourism. The economic worth of wildlife also consists of a range of indirect benefits that are not tradable in the market and do not have market value. These indirect use values could come from the animals' functional contribution to the balance and health of the eco-systems in which they thrive. On the other hand, non-use values can be attached to wildlife for their continued existence even though a person may not directly or indirectly benefit from them either now or at any definite time in the future (existence value). A person can also attach values to wildlife in that future generations may benefit from them (bequest value).

The ratio between use and non-use values will differ across countries at different stages of development as will values related to wildlife and the importance of conservation among various socio-economic groups. People's attitudes to wildlife are shaped by religious, cultural, social and economic factors (Manfredo, Teel and Bright 2003). In developed countries, many studies have used the Contingent Valuation Method (CVM) to capture the non-use values of wildlife and explore the variables that determines such values. Studies have looked into the importance of information and knowledge by exploring how they shape our understanding of the risks, concerns and values as expressed in terms of willingness to make personal trade-offs by making private contributions to wildlife conservation.

While indirect uses and non-uses account for the larger part of the total economic value of endangered species, there have been few studies in developing countries on estimating non-use values and exploring their policy implications. The economics of wildlife conservation depend on understanding what shapes non-use values of different segments of the population and in having clearer perceptions of what people know, their

understanding of the importance of wildlife, and what shapes their preferences. The purpose of this study was to develop an understanding of these issues in the context of an urban society in a developing country — Thailand. This study explored the profiles of people who were already making private contributions to environmental and wildlife-related causes and examined differences between them and samples drawn from the general public in terms of motives, knowledge and awareness of risks, and causes of extinction of a selected group of Thailand's endangered animal species. The CVM was employed to estimate the economic benefits of endangered species conservation. The study also explored payment vehicle effects for mandatory and voluntary payment mechanisms as well as responses to various incentives incorporated into fundraising campaigns such as seed money and the option of receiving refunds from contributions in the event that the conservation program in question was not launched.

2.0 LITERATURE REVIEW

2.1 Philanthropic Behaviour

Economic logic presumes that given an individual's self-interest, people will tend to free-ride on others' private contributions to public goods (Samuelson 1954). Meanwhile, economic theory assumes that people derive satisfaction only from the consumption of private goods and the total provision of public goods (Warr 1982; Roberts 1984; Bergstrom, Blume and Varian 1986). Yet in social and economic settings, particularly in developed countries, the charitable sector plays quite a significant role both in the number of contributors and the value of donations. Private contributors voluntarily donate despite strong incentives to free ride. The Independent Sector Survey of 2,500 households in 1997 showed that an average person in the US spent USD 1,000 per year on charitable causes while individual tax payers accounted for 77% of the total dollars donated in 1998 (Independent Sector 1994). The profiles of contributors were found to correspond to income levels, i.e., the higher the income, the greater the likelihood of giving and the higher the sum donated. Donations to environmental causes were made by 11.5% of US households which gave an average of USD 110, equivalent to 1.6% of the average total household income. Randolph (1995) used the tax returns of around 12,000 individuals from 1979 to 1988 to construct a profile of the charitable sector. He found a U-shaped giving pattern. That is, the lower income group gave over 4% of its income. As incomes rose, the proportion reduced to 1.3% and then increased to about 3.4% in the highest income group. Randolph (1995) also found that higher educated people gave more often, more money and a higher fraction of their income. Older people also gave a greater fraction of their income and poorer people tended to give more to religious causes.

It has been generally acknowledged that economic analysis cannot reveal all the subtle and complex influences on giving, hence answers to questions on why people give have come from the social science discipline. Studies have looked into plausible social explanations such as religious beliefs, basic human desire to help, peer pressure at work, and the need to send out signals on one's social status (Rose-Ackerman 1996). Other

factors influencing behaviour that have been studied included cultural factors, gender (Andreoni and Vesterlund 2001; Eckel and Grossman 1998), social capital (Glaeser et al. 2000) and in-group effects (Polzer, Stewart and Simmons 1999). While it is the general assumption that other non-economic factors such as social groupings, religious organizations, and activities of the fundraisers can have an impact on economic behaviour, economic studies on these social factors have revealed that such effects are small (Andreoni and Scholz 1998) although they could nonetheless provide insights into the concept of giving.

In "The Price of Virtue — the Economic Value of the Charitable Sector", Foster et al. (2001) divided the social value of charities into two categories according to the groups of beneficiaries, namely, the target groups or the direct users of the charity, and the rest of society or the indirect users. Indirect benefits can be derived from the following: (i) altruistic benefits, in this case defined as the benefits from simply knowing that contributions could (in some way) help prevent the extinction of endangered species; (ii) external benefits, referring to the spin-off effects on others who do not form part of the target group; (iii) option benefits referring to the motive to give in anticipation of the likelihood that some benefits may be gained from those charities in the future; (iv) "warm glow" benefits described as "impure altruism" (Andreoni 1990) where the donors' satisfaction is derived from the knowledge of their generosity, including social recognition as donors, over and above altruistic sentiments towards the beneficiaries; and (v) private benefits of volunteers to charities in the form of moral satisfaction, social contacts and work experiences. Many studies have been undertaken to explore the economic logic of people's behaviour in these respects. However, studies on private contributions towards the provision of public goods have been almost entirely conducted in developed countries, albeit with different income, social and cultural backgrounds. In the following section, some of the literature exploring these areas are reviewed, providing a base for the conceptual framework of this study. Studies on the influence of the actual design of fundraising campaigns such as offering seed money, leadership (in terms of some large donors leading the way for others to follow) and refund options are also reviewed.

2.2 The "Warm Glow" Effect

From the various experiments he conducted to explore the nature of philanthropic behaviour, Andreoni (1993) argued that people received internal satisfaction from giving. Giving to charity was like buying another good; the more you bought, the greater the satisfaction. He defined this sense of satisfaction derived from the act of charity as the "warm glow" or the utility that an individual derived from the act of giving in addition to the provision of the public good itself. He further put forward that it represented a core economic motivation for giving. The act of giving itself increased an individual's utility while the relationship between the utility derived and the act of giving was described as being conditioned by an individual's private consumption, the quantity of the public good and the individual's own contribution to the public good (Andreoni 1988; 1989).

In Johansson-Stenman and Svedsäter's (2001) study on "Self-Image and Choice Experiments: Hypothetical and Actual Willingness to Pay", the warm glow sentiment was equated with the individual's self-image which in turn was influenced by the desire to see oneself as "nice" (Akerlof and Dickens 1982), the honesty to oneself, and the consistency between actions and previously made statements or commitments (Aronson 1992). It was hypothesized that if the respondents knew that a situation was hypothetical, they would also know that the preferences given in the survey questionnaire would not affect either their individual private consumption or their expenditure on public goods. Since utility maximization was conditioned solely by the desire to maximize self-image in this case, there would be a tendency to overstate the willingness to pay (WTP). Hence, Johansson-Stenman and Svedsäter (2003) postulated that "*hypothetical WTP will exceed actual WTP in cases which involve an important perceived ethical dimension and where a high WTP is considered ethically commendable, but not otherwise"*. According to the authors, choices affecting animals, which were the focus of their study, were examples of choices involving ethical considerations, hence, the stated Mean Willingness to Pay (MWTP) under hypothetical situations was likely to be higher than the actual MWTP. Several studies have been conducted which suggest that the tendency to be generous in verbal pledges to donate might not be the case when actual payment is required (Farrell 1995; Cummings and Taylor 1999).

2.3 The Influence of Seed Money and Leadership

Seed money is an initial contribution given to the conservation trust fund, which could come from large donors, companies, or even from the government. Technically, having some seed money or getting some celebrities to make big donations should send off signals of credibility and a high probability that the conservation program will be actually launched. Several studies have been conducted to understand how the presence of seed money and the influence of donor-leaders can induce positive responses to giving. Andreoni (1998a; 1998b) publicly announced that seed money would increase charitable donations. For a "threshold public good" (which requires a minimum amount of funds if the investment in public goods is to be made at all), there would be a Nash equilibrium (a win-win situation for each actor where neither would have to give anything at all) with zero charitable giving, in the absence of seed money. Donor-leaders could, on the other hand, provide enough seed money to ensure surpassing the threshold in the public funding drive, thus eliminating the zero-equilibrium (Andreoni 1998a; 1999b).

Vesterlund (1998) observed that leadership involvement sent signals about the quality of the public good and that where there was already complete information about the quality of the public good, announcements about celebrities making donations had negligible effects on contributions; in the absence of information, however, leadership involvement had a lot of impact. Reconfirming Vesterlund's findings, Potters, Sefton and Vesterlund (2001) also indicated that announcements caused substantial increases in donations as followers made inferences from the leaders' announced contributions and tended to match them. Based on information obtained from a survey on a university campaign covering 3,000 households, List and Lucking-Reiley (2002) found that increasing seed money from 10% to 67% of the campaign goal would increase donations

by six-fold. The study also found that introducing refunds if the threshold was not reached would increase contributions by 20%.

2.4 Related Studies on Valuations of Wildlife and Endangered Species

One of the most widely used methods to estimate the value of environmental goods is the Contingent Valuation Method (CVM). Over the years, as more and more researchers have adopted this research tool, the body of knowledge on how to apply it to obtain as accurate a value for environmental goods as possible has grown.

Reaves, Kramer and Holmes (1999) conducted a CVM survey to estimate the value of protection and restoration of a bird and its habitats. The subject of the valuation was the red-cockaded woodpecker, listed as endangered in 1970. Since it was not largely known to the general population and had non-consumptive use value to a very small segment of the population, its non-use values made up most of its total value. The survey was conducted soon after Hurricane Hugo struck the Francis Marion National Forest in 1989 and the authors assumed that the incident did much to attract the attention of people to the red-cockaded woodpecker compared to normal circumstances. The study explored three main areas. The first was the importance of the format of the questions. This was done by comparing the differences in survey response rates, item non-response (questions in the questionnaire that were not answered) rates and protest bids from responses to varying CV question formats in the survey. Two other research questions were whether measures of central tendency (where responses tend to be similar no matter what CV question formats are adopted in the survey) suggested convergent validity across formats and whether welfare values obtained from the different question formats were influenced by similar determinant factors. The researchers used the open-ended, payment card and double-ended dichotomous choice question formats. Information provided in the questionnaire was on the probability of survival of the red-cockaded woodpecker population for several population sizes and the management of the conservation programme.

The elements of uncertainty introduced in the CV scenarios created complexities for the respondents, but were believed to be a most accurate way of portraying conservation options. Respondents were asked their WTP to an independent foundation set up with the specific mandate of protecting and restoring the endangered red-cockaded woodpecker, their WTP each year to protect the remaining habitats to maintain the existing probability of the birds' survival (50%), and their WTP to finance specific restoration activities which would improve the woodpecker population's chance of survival from 50% to 99%. The study found a lower response rate, a higher item non-response rate and a higher level of protest responses for the dichotomous choice format compared to the open-ended or payment card formats. Convergent validity was found in a three-way comparison of non-use values.

Yen, Boxall and Adamowicz (1997) conducted an econometric analysis on donations for environmental conservation. Their study addressed the situation where funding for environmental programmes in North America relied increasingly on private donations either directly or through membership organizations. The study explored the

relationship between factors such as income, marginal tax rate, wildlife-related activities and marginal propensity to donate. The econometric model of the study included a two-level decision structure which reflected the two sequential decision-making processes of individuals, firstly whether or not to donate, and subject to that decision, on how much to donate. It was hypothesized that these decisions were made differently. The key findings were that income had the largest impact on the probability of donation while a marginal tax rate was not significant in explaining charitable behaviour. A third factor explored was the economic activities themselves, namely recreational hunting and angling, which were the traditional sources of revenue for wildlife habitat and endangered species protection, particularly in Canada. A model was constructed to forecast changes in donation that resulted from the decline of these activities. It was found that while a decline in consumptive uses resulted in corresponding reductions in donations, the impacts were not large and may be offset by non-consumptive uses.

Motivations can also be influenced by the payment mechanisms which offer different incentives. Values can be influenced by the payment mechanisms themselves and some studies have found that the credibility of the mechanism mattered more than the potential effect of different incentives (Jakobsson and Dragun 1996; Bateman et al. 1995). Champ, Boyle and Brown (2003), for example, used a three-way split sample survey design to collect data from three independent samples via mail to compare differences in WTP from different payment mechanisms: (i) a voluntary contribution to a trust fund; (ii) a provision point mechanism involving a voluntary contribution which specified that at least 30% of the households would have to donate or the property (an open space land in Boulder county) could not be purchased, and that money would be paid back if insufficient contributions were made and also if there were surplus contributions; and (iii) a one-time tax increase based on the results of a referendum. The researchers found that respondents were more likely to answer affirmatively to the WTP question when posed as a referendum vote than when posed as a request for a donation[1]. There were also more positive responses to the provision point mechanism than to individual contribution. To test this, samples were split according to the payment vehicles, which offered different approaches to funds mobilization and different incentives.

Options within fundraising campaigns can also induce the probability of contributions, such as matching funds and refunds of money in the event that inadequate contributions are raised. The payment vehicles in this study followed, in part, the findings of Brubaker (1975) that individuals would pay if given assurances that the remainder of the community would make appropriate matching offers along with a money-back guarantee in the event that sufficient contributions were not received. If both assurances could be given, then the public good would be provided (Brubaker 1975). These findings were confirmed by Bagnoli and Lipman (1989) who found that donations

[1] When posed as a referendum, respondents are asked to vote "for" or "against" a given bid amount. If the referendum passes (i.e., the majority votes "for" it), then everyone will have to pay, even the ones who voted against it. In the case of a request for a donation, the decision to donate or not and how much is voluntary and up to the individual.

would increase if there were indications that there would be refunds if not enough money was solicited. Similar findings were reported by Bagnoli and McKee (1991) and List and Lucking-Reiley (2001).

3.0 METHODOLOGY

3.1 Respondents and Survey Protocol

The Contingent Valuation Method (CVM) was used as a tool for estimating the value of a group of Thailand's endangered species which comprised elephants, dugongs, gibbons, hornbills, marine turtles and tigers. As one of the objectives of the study was to develop an understanding of the charitable sector market for wildlife protection and conservation, the study covered two groups of respondents. One was referred to as 'general respondents' and was randomly sampled by the National Statistical Office (NSO) of Thailand from the population-sampling frame for Bangkok used in past socio-economic surveys[2]. The other group of respondents was made up of 'donors', referring to those who were already regular contributors to charitable organizations working on animals in general, and wildlife and habitats in particular. The intention was to analyse the socio-economic profiles of existing donors to wildlife causes and compare these with those of the general public. Whether they belonged to a distinct socio-economic group and what motivated their charitable behaviour would be beneficial information for campaigners, the public or other interested groups in directing efforts to those with strong tendencies to contribute.

For the general respondents group, enumerators were instructed to locate respondents who were household heads, of working age, employed and responsible for decision-making over household expenditure based on addresses given by the NSO for the 50 districts of Bangkok. Replacements were allowed only if selected respondents had moved or addresses had changed; in such cases, replacements were then randomly selected from within the same residential block. Purposive sampling was used to identify donors who were living in Bangkok and provinces in the vicinity. [3] This was because adopting a random sampling of the general population of Bangkok was unlikely to generate an adequate number of donor samples for comparison purposes. The selected samples were contacted initially by telephone to request for interview appointments. Face-to-face interviews were administered with 955 samples; 840 general respondents and 155 donors.

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[2] The NSO used simple random sampling techniques to provide a sample size of 2,200 people using the NSO's sampling frame for the 50 districts of Bangkok.

[3] The list of donors was from obtained from eight NGOs working with animals and wildlife. These included (i) the Sueb Nakhasathien Foundation, (ii) Wild Animal Rescue (WAR), (iii) World Wildlife Fund (WWF), (iv) the Thai Society for the Protection of Cruelty to Animals (TSPCA), (v) the Hornbill Rescue Foundation (HRF), (vi) the Bird Conservation Society of Thailand (BCST), (vii) the Wildlife Fund Thailand (WFT), and (viii) the Thai Animal Guardian Association (Thai AGA). A total of 1,369 letters was sent out.

3.2 Questionnaire Structure and the CV Scenario

The questionnaire was drafted based on information obtained from four Focus Group Discussions (FGDs) and two pre-tests[4]. The finalized questionnaire consisted of four main sections. The first section sought to uncover what the current demand for wildlife conservation was, i.e., how many people were contributing, what type of people contributed, etc. A set of warm-up questions was asked to develop the profile of the different respondent groups, some of which were used in the analysis of determinants of Willingness to Pay (WTP) in the logit models. These included some of the attitudinal factors explored by previous studies discussed earlier such as altruism, warm glow, impact of social influences including leadership, positive and negative peer group pressure, self-image (of the donors), attitudes towards the charitable sector and past donations.

The second part contained a set of questions on knowledge about wildlife, importance attached to conservation measures relative to human needs and trust placed in conservation agencies, past and current contributions to wildlife conservation activities, and awareness of the risk of extinction. As opposed to asking respondents to rank the six chosen species (tigers, elephants, dugongs, gibbons, marine turtles and hornbills) in order of preference as to how they would like public resources to be allocated, respondents were shown photographs of the animals, two at a time and were asked what their choice would be, if the budget available was only enough to save one. Altogether, 15 paired combinations were shown. No additional information was provided on the animals such as the numbers that were left, comparative risks of extinction, and measures already undertaken. The respondents were reminded only that decisions involved trade-offs, i.e., their answers might make a difference to the chances of survival of some at the expense of others. In addition to this pairing exercise, a series of questions was posed to capture the relative preferences for the six endangered species and the respondents' perceptions of the importance of these in terms of their ecological, social and economic value. The respondents were also questioned on their trust in the usage of donations for the stated objectives which were to conserve the specific endangered animals in Thailand.

The third section of the questionnaire was the contingent valuation scenario and description of the payment mechanisms (described in detail below) followed by the final section on the socio-economic profiles of the respondents.

3.3 The CV Scenario: The Environmental Good Being Valued

The information provided in the CV scenario was based on various considerations such as (i) the effect of information on responses (Boyle 1989); (ii) taking precautions on the possibility that the absence of specific information on species would result in biased

[4] FGDs were organized between April and July 2004 with (i) donors, (ii) university students, (iii) low income groups, and (iv) middle to high income groups. Altogether, 280 respondents were interviewed in two pre-tests in April and September 2004. The survey was administered between March and April 2005.

WTP estimates (Carmines and Zeller 1979); (iii) how important information was, particularly in cases where the respondents were not fully aware of how they currently benefitted from a resource or how they could benefit from it in the future (Bergstrom, Stoll and Randall 1990); and (iv) the need to clearly communicate the objectives of the proposed policy intervention and the impacts leaving as little room as possible for respondents to make their own different assumptions. All these factors were balanced against the time constraint in conducting the interviews.

The scenario described the situation of Thailand's wildlife; what was already being done and what was being proposed. Respondents were given information about the ongoing efforts of both the public sector and a number of non-profit organizations working to save various endangered species. They were alerted to the human resource constraints of having to focus on issue-specific and species-specific tasks, and generally being too overwhelmed by immediate tasks to allocate time and resources to longer term measures to address the root causes of the threats to endangered species.

The respondents were then introduced to the proposed Comprehensive Programme for the Protection and Conservation of Endangered Wildlife. The programme would cover four major areas: (i) wildlife habitat protection; (ii) in-depth studies on wildlife; (iii) the prevention of poaching of wildlife and illegal trade of wildlife and wildlife products; and (iv) wildlife rehabilitation and return to the wild. The respondents were told that the proposed programme would provide additional support so that existing efforts could be executed on a more comprehensive scale plus provide the additional advantage of greater coordination among concerned agencies. They were also informed that because of financial limitations, a survey was being undertaken to explore the extent to which the general public would be willing to support the wildlife conservation program by contributing to a trust fund. This trust fund would be managed by a committee with a balanced representation of government and non-government organizations to achieve a greater intensity of efforts and would encompass an in-built check and balance mechanism, hence, there would be transparency in the use of the funds. The CV scenario also clearly indicated that while greater benefits could be expected, no 100% certainty of positive outcomes could be given.

3.4 Payment Mechanisms and Hypotheses

The information above provided the context for posing the valuation question. Respondents were asked whether they would be willing to contribute a specified amount; a one-time payment which would be used to set up a trust fund to finance the proposed Comprehensive Programme for the Protection and Conservation of Endangered Wildlife.

There were two payment mechanisms. One was a mandatory payment mechanism where respondents were asked to vote 'for' or 'against' a referendum to impose an income tax surcharge which would be used to set up a 'Wildlife Protection and Conservation Fund'. The other was a voluntary payment mechanism where respondents were asked to decide whether or not to contribute to a 'Wildlife Protection and Conservation Fund'. The difference between the two payment mechanisms was that for the mandatory payment mechanism, in the event that the majority voted 'for' the

referendum, the policy to impose the income tax surcharge would affect everyone regardless of how they voted. Free riding would thus become less of an issue. In the voluntary mechanism, on the other hand, an individual would not affect or be affected by other respondents' decisions.

For each of these payment mechanisms, there were two variants, these being additional features of the funds mobilization campaign. The intention of adding these features was to test their effects on willingness to pay. For the mandatory payment mechanism, this was seed money. The two mandatory payment mechanisms were referendums to impose an income tax surcharge 'with' and 'without' the seed money component. In the 'with' seed money option, respondents were told that for the programme to go ahead, the government would make the initial effort of mobilizing funds from large donors. The condition was that if less than 25% was mobilized, the programme would not go ahead *even if* the majority of the people voted for the policy. In the 'without' seed money option, the existence of seed money from large donors was not a prerequisite feature of the mobilization campaign.

In the voluntary payment mechanism, there were also two variants, i.e., 'with' and 'without' seed money and refunds. In the 'with' seed money and refund option, the respondents were informed that prior to mobilizing funds from the general public, the government would approach large donors and private companies to contribute funds as seed money. The conservation program would be launched if 25% of the required capital could be mobilized from these sources and if the combined value of donations from large donors and the general public was at least 50% of the required capital. In the event that the conservation program could not be launched, the contributions made would be refunded, but the interest generated from the funds during the campaigning period would be donated to organizations already involved in ongoing activities to save wildlife. In the 'without' seed money and refund option, the funds mobilization campaign did not have seed money and refund features. In this payment mechanism, respondents were merely asked to decide whether or not they would pay a specified bid amount.

The null hypotheses and the alternative hypotheses are listed below (E = expected value):

H_0: $E(WTP_{\text{mandatory tax}}) = E(WTP_{\text{voluntary contribution}})$

H_a: $E(WTP_{\text{mandatory tax}}) \neq E(WTP_{\text{voluntary contribution}})$

H_0: $E(WTP_{\text{mandatory tax with seed money}}) = E(WTP_{\text{mandatory tax without seed money}})$

H_a: $E(WTP_{\text{mandatory tax with seed money}}) \neq E(WTP_{\text{mandatory tax without seed money}})$

H_0: $E(WTP_{\text{voluntary contribution with seed money \& refund}}) = E(WTP_{\text{voluntary contribution without seed money \& refund}})$

H_a: $E(WTP_{\text{voluntary contribution with seed money \& refund}}) \neq E(WTP_{\text{voluntary contribution without seed money \& refund}})$

3.5 Elicitation Method, Price Bids and Sample Sizes

The question on WTP was posed as a single bound dichotomous choice question for a one-time payment. Negative responses to the WTP question were followed by an open-ended question on the amount that the respondent would be willing to pay.

The respondents were split into four groups according to the payment mechanism: (i) mandatory 'with' seed money, (ii) mandatory 'without' seed money, (iii) voluntary 'with' seed money and refund, and (iv) voluntary 'without' seed money and refund. Donor samples were offered for option (iii) only. Five bid prices were used: (i) 100 Baht (2.94 USD), 150 Baht (4.4 USD), 250 Baht (7.4 USD), 1,000 Baht (29.4 USD), and 3,000 Baht (88.2 USD)[5]. The respondents were randomly assigned to each of the payment mechanisms and then randomly divided into five groups for each bid price.

Table 1. Price bids and distribution of samples by payment vehicles

Unit: number of respondents

Payment vehicles	**No. of respondents**
1. General Respondents	
1.1 Mandatory Tax	
• with seed money	229
• without seed money	196
1.2 Voluntary Contribution	
• with seed money & refund	219
• without seed money & refund	196
2. Donors	
• voluntary contribution with seed money & refund	155

It has been observed in past studies that the tendency is to be generous in verbal pledges of donations which might not be the case when real payments are involved, particularly in choices affecting animals (Johansson-Stenman and Svedsäter 2003; Farrell 1995; Cummings and Taylor 1999). A 'cheap talk script' was therefore added to try and overcome the divergence between hypothetical willingness to pay and actual willingness to pay by addressing the issue of hypothetical bias in the subjects by alerting them to this inclination as well as requesting for more careful consideration over their WTP answers (Cummings and Taylor 1999). Also following the recommendations of past studies on the importance of reminders of substitutes and budget constraints (Freeman 1993; Champ, Boyle and Brown 2003), the respondents were asked to consider other pressing needs of society and reminded of the opportunity costs of their private consumption.

[5] The exchange rate used was 34 Baht to 1 USD.

3.6 Experiments with Real Money

According to the Theory of Cognitive Dissonance (Festinger 1957), people's decisions were in general, consistent and did not tend to conflict with previous behaviour — hence, the stated Mean Willingness to Pay (MWTP) under a hypothetical situation was likely to influence the 'real' MWTP (when real money was involved) as well as decisions on the trade-offs between self image, the individual's private consumption, and the desirable changes in the quantity of the public good. Moreover, decisions would be influenced by the scale of financial incentives as self-image would be easier to buy if the amount of money required was small.

Some studies have pointed out that decision-making over trade-offs would be different between out-of-pocket money and 'found money', i.e., money or tokens given as part of the experiment. In other words, people would tend to be more generous in the latter case, hence, researchers may over-estimate their generosity. To minimize this effect, respondents in the general respondents category were informed from the beginning that the money for the experiment was, in actual fact, tokens of appreciation for the time spent on in-person interviews, hence, it was money earned (equivalent to out-of-pocket money) as opposed to found money[6]. The enumerators started the interviews by asking the respondents to decide how to use the 100 Baht compensation given to them. They had a choice between (i) keeping the money, (ii) donating it to charitable organizations working with under-privileged people in Thailand, or (iii) donating it to charitable organizations working with wildlife[7]. Two donation boxes were placed in front of the respondents; a 'Blue Box' for human welfare-related charity organizations and a 'Green Box' for wildlife organizations. Decisions were made in private in the absence of the enumerators. While not directly evaluating the differences between real and hypothetical situations, this experiment was included in the study to test the consistency between past charitable behaviour and attitudes to wildlife, and a situation where respondents were confronted by real decisions over the allocation of funds.

4.0 EMPIRICAL RESULTS

4.1 Demographic Profile of Respondents

Donors, based on 155 in-person interviews, were, in comparison to the general respondents, older and more educated. Income-wise, they belonged to the affluent middle to higher income group. Their mean income of 536,112 Baht/year[8] was more than five times the average per capita income of 92,960 Baht/year [9] and more than twice the average income of those belonging to the general respondents group.

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[6] This experiment did not include the donors who were already regular contributors to wildlife organizations and may therefore have had an inherent preference for the Green Box.
[7] The 100 Baht was given to the respondents in five 20 Baht notes.
[8] Conversion was made using the exchange rate of 34 Baht to 1 USD
[9] Source: National Economic and Social Development Board. www.nesdb.go.th

The majority of the general respondents tended to fit into the lower income and the lower to middle income group with over 70% reportedly earning between 5,000 Baht/month to 30,000 Baht/month, with mean income of 19,502 Baht/month[10]. The differences between the donors and general respondents for all demographic variables are shown in Table 2. Apart from significant differences in age and income, donors also tended to have higher levels of education while a higher percentage of them were women, a lower percentage were married and on average, they had fewer children.

Table 2. Summary of the socio-economic profiles of the donors and general respondents

	Age (years)	**Gender (% Male)**	**Marital Status (% Married)**	**Children (average number)**	**Income (Baht/month)**	**Education (years)**
Donors	45.53 (9.3)	39.4	48.1	0.6 (1.04)	44,690.35 (30,346.74)	16.27 (1.51)
General Respondents						
Mandatory tax with seed money	40.86 (11.11)	52.4	64.9	1.20 (1.37)	21,340.71 (19,609.45)	13.62 (3.39)
Mandatory tax without seed money	41.46 (10.57)	56.6	68.2	1.22 (1.31)	26, 178.39 (21,152.93)	14.07 (3.17)
Mandatory tax pooled	41.14 (10.57)	54.4	66.4	1.20 (1.34)	23,605.88 (20,465.70)	13.83 (3.30)
Voluntary contribution with seed money	39.70 (12.82)	49.3	58.8	1.15 (1.38)	15,305.96 (15,522.56)	12.04 (4.00)
Voluntary contribution without seed money	39.74 (11.33)	47.4	60.1	1.05 (1.33)	15,293.37 (16,127.61)	12.76 (3.75)
Voluntary contribution pooled	39.72 (12.12)	48.4	59.4	1.10 (1.35)	15,300.01 (15,792.02)	12.39 (3.90)
Average for all General Respondents	41.23 (11.23)	51.4	63.0	1.07 (1.32)	23,426.14 (22,875.81)	13.61 (3.61)

Notes:
(1) Donors N = 155; General Respondents N = 840
(2) The figures in parenthesis are standard deviations.
(3) Differences between mean income, age and education between the donors and the general respondents were significant at the $p<0.01$ significance level.
(4) Because of skewed distribution in (3) above, the non-parametric Mann-Whitney test was used for the . The difference was significant at the $p< 0.01$ significance level.

[10] These were reported individual incomes.

The mean income of the respondents for the mandatory tax payment mechanism pooled samples was 23,606 Baht/month, which was significantly higher than the mean income of the pooled samples for the voluntary contributions respondent group of 15,300 Baht/month. This difference can partly be attributable to the additional screening in the sampling procedure for respondents in the tax split sample who had to be registered taxpayers. This meant the exclusion of several categories of self-employed people, those in the informal sector, and wage-earners.

While there were statistically significant differences in income between the respondents in the mandatory and voluntary payment mechanisms, within each payment mechanism, the differences in income between the samples of 'with' and 'without' the added features in the payment mechanisms were generally not statistically significant. The only exception was the mean income of the respondents in the mandatory 'with' seed money option at 21,340 Baht/month, which was significantly lower than mean income of the mandatory 'without' seed money option of 26,178 Baht/month. For the voluntary payment mechanism, the mean income of the 'with' and 'without' seed money and refund options were comparable and were respectively 15,306 Baht/month and 15,293 Baht/month.

4.2 Attitudes and Preferences

4.2.1 Concerns attached to wildlife extinction

The importance the respondents attached to the problems of wildlife extinction is shown in Table 3. It was based on the ranking of statements on current problems of the country in the order of how they thought public resources should be allocated. The overall rankings for both respondent groups were similar.

Table 3. Issues which should be top priority for public spending

Problems needing urgent remedial measures	**Number and % of those who ranked the issue as top priority**	
	Donors	**General Respondents**
Social and political unrest in the southern region of Thailand	75 (48.4)	348 (41.4)
Poverty	37 (23.9)	261 (31.1)
Drug trafficking and drug addition	9 (5.8)	122 (14.5)
Inadequacy of coverage of public health services	6 (3.9)	23 (2.7)
Destruction of forest resources and wildlife habitats	12 (7.7)	26 (3.1)
Abandoned and abused children	8 (5.2)	48 (5.7)
Risk of extinction of wildlife and illegal wildlife trade	8 (5.2)	11 (1.3)

Notes: Donors N = 155; General Respondents N = 840. Figures in parenthesis are percentages of the sample groups.

In general, environmental problems were not considered as urgent matters for public spending compared with other social and economic concerns[11]. Considered of even lower priority were wildlife issues. For the general respondents, wildlife extinction was rated at the lowest level of priority. For donors, the lowest priority was public health care services. A possible explanation for this could be perceptions that health services were already well-distributed and adequately covered.

In addition to prioritizing the country's pressing issues, respondents were asked to rate a set of statements which would reflect the attitudes and values attached to wildlife, perceptions over personal responsibilities and comparative importance between human and animal welfare. A five-point Likert scale from '1' for "strongly disagree" to '5' for "strongly agree" was used. Table 4, which reports the percentages of those who gave the two highest scores of '5' and '4' for each statement, indicates similarities among the two respondent groups, and in some cases, notable differences in the degree and intensity of belief.

Table 4. Ratings of statements on environmental and wildlife-related issues

Unit: number of respondents who voted "strongly agree" and "agree"

Statement	Donors	General Respondents
The government should raise more funds to deal with environmental programs in this country.	83 (94.3)	642 (76.4)
There are more important environmental concerns than endangered species conservation.	36 (40.9)	500 (59.5)
Poaching of wildlife species should be punishable by law.	88 (100)	805 (95.8)
It is everyone's duty to ensure that plants and animals as we know them today will exist for mankind in the future.	83 (94.3)	756 (90.0)
Citizens should contribute to endangered species conservation by making cash donations to this cause.	48 (54.5)	428 (51.0)
Endangered species are important even if I don't get to see or interact with them.	80 (90.9)	711 (84.6)
The government should raise taxes to pay for more endangered species protection.	37 (42.0)	329 (39.2)
The government should invest in helping people before it spends money on endangered species.	32 (36.4)	508 (60.5)
Households who earn more income should pay higher taxes in order to pay for endangered species conservation.	57 (64.8)	595 (70.8)
Endangered species conservation should not be a priority concern of the government.	5 (5.7)	239 (28.5)

Notes: Donors N = 88 (Some parts of the questionnaire were revised halfway. The first batch of donors interviewed did not have these questions.); General Respondents N = 840. Figures in parenthesis are percentages of the sample groups.

[11] The survey was conducted immediately after incidents of violence in the south of Thailand had become more frequent and the army had taken drastic measures in curtailing Muslim rebels in the southern provinces.

The findings showed that donors felt more strongly about environmental concerns. This was more noticeable where the welfare of animals was concerned and where there were trade-offs for resource allocations. For example, a lower percentage of donors 'strongly agreed' and 'agreed' with the statements that "*There are more important environmental concerns than endangered species conservation*", "*The government should invest in helping people before it spends money on endangered species*", and "*Endangered species conservation should not be a priority concern of the government*".

4.2.2 The market for charitable contributions to wildlife conservation

The socio-economic profiles of the donors presented earlier suggest that demand for wildlife conservation as an environmental good was limited to the more affluent and higher educated. Among the general respondents, just over 6% were, so to speak, regular contributors to wildlife charities (Table 5). Most tended to be spontaneous contributors, i.e., people who occasionally donated when approached at events where campaigners (for charities) met potential suppliers, when they accidentally came across fundraisers, or generally when they were in a position to contribute without having to incur much transaction costs or without having to go out of their way (Tables 5 and 6).

The act of giving tended to be more frequent when that act involved returns in the forms of goods and services. Table 5 also shows that people contributed in exchange for goods (45%) such as T-shirts, stickers, or souvenirs, or in exchange for services such as attending charity concerts (11%). In this situation, one can conjecture that contributions were motivated by the direct use value of the goods provided.

Few general respondents contributed to charitable causes which required substantial effort on the part of the donor, and in situations where goods or services were not provided in exchange for the donations such as phoning-in during television and radio broadcasts, or transferring money into a bank account.

Table 5. The nature of charitable giving

Acts of charity	Donors N = 155	General Respondents N = 840
Attended charity concert	51	94
	(32.90)	(11.20)
Bought stickers, T-shirts	125	377
	(80.60)	(44.90)
Charity walks	25	111
	(16.10)	(13.20)
Regularly donated through bank account deductions	81	55
	(52.30)	(6.50)
Phoned in to donate when there requests on television or radio programs	16	34
	(10.30)	(4.00)
Donated occasionally	142	584
	(91.60)	(69.50)
Volunteered as helper when had free time	44	94
	(28.40)	(11.20)
Donated gifts	102	409
	(65.80)	(48.70)
Freed birds, turtles, and buffaloes	75	574
	(48.40)	(68.30)
Bought bananas for elephants walking the streets of Bangkok	55	516
	(35.50)	(61.40)
Gave food to stray dogs and cats	89	434
	(57.40)	(51.70)
Helped injured stray dog and cats	52	236
	(33.50)	(28.10)
Supported activities related to wildlife	122	219
	(78.70)	(26.10)
Other	6	4
	(3.90)	(0.50)

Notes: Multiple answers allowed. Figures in parenthesis are percentages of the sample groups.

Findings on why people become involved in charitable activities suggest that efforts on the part of the organizations themselves do pay off (see Table 6). Directly approaching the subject (38%), making information and delivery channels such as stalls and booths in department stores and exhibition halls conveniently accessible (32%), and providing credible information on the cause (29%) were found to be more effective ways

to trigger donations. Positive peer group influence was also cited by a substantial number of respondents (20%).

Table 6. Reasons for contributing to charity

Unit: number of respondents who voted "strongly agree" and "agree"

Reasons for contributing to charity	**Donors N = 155**	**General Respondents N = 840**
Happened to be at the event, exhibition or the booths	68	268
	(43.90)	(31.90)
Directly approached by the organization	79	319
	(51.00)	(38.00)
Happened to be feel charitable at that time	36	204
	(23.20)	(24.30)
Encouraged by friends and people you knew	44	169
	(28.40)	(20.10)
Saw other people donate and wanted to follow suit	2	16
	(1.30)	(1.90)
Was afraid that people would think badly of you if you did not donate	0	3
	(0.00)	(0.40)
Someone you respected donated and you wanted to follow the good example	10	36
	(6.50)	(4.30)
Donated because you did not want to be bothered	2	16
	(1.30)	(1.90)
Wanted to support the cause of the organization which was campaigning for funds	111	242
	(71.60)	(28.80)

Note: Multiple answers allowed. Figures in parenthesis are percentages of the sample groups.

Table 7 shows the feelings people experience after making charitable donations. The strongest sentiment appeared to be what literature on charitable actions describes as the "warm glow". Around 68% of general respondents strongly agreed or agreed to this statement: *"You feel pleased with yourself because you've done something good"*. For others, it was the consolation of having done something useful — 52% strongly agreed or agreed with the statement: "*You felt that at least you've contributed to solving the problem"*. One other favourite statement, selected by nearly 30% of the respondents, reflected a sentiment that may be somewhat specific to the Thai religious and cultural setting: *"You do something good and you are rewarded with merit"*. Only 28% said they were hopeful that the donation would help stimulate efforts to really solve the problem.

Table 7. Feelings after having made donations to charity

Feelings about donating	Donors N=155	General Respondents N=840
Felt pleased about having done something good	100	569
	(64.50)	(67.70)
Felt good for having at least contributed to solving the problem	109	434
	(70.30)	(51.70)
Felt hopeful that the money donated will lead to concrete measures to solve the problem	68	231
	(43.90)	(27.50)
Did not feel anything much because the money given was not much and is unlikely to amount to anything	5	40
	(3.20)	(4.80)
Felt that at least you did your duty even though it is unlikely to amount to anything	22	104
	(14.20)	(12.40)
You do something good and you are rewarded with merit	26	247
	(16.80)	(29.40)
Wanted other people to know so they will follow	15	30
	(9.70)	(3.60)
Wanted other people to know that I have done something good	0	11
	(0.00)	(1.30)

Note: Multiple answers allowed. Figures in parenthesis are percentages of the sample groups.

4.2.3 Knowledge about wildlife

To make a broad assessment of their knowledge about the wildlife situation, the respondents were asked to read nine statements about wildlife and identify whether they were true or false, and to answer one question (Table 8). In choosing the statements, the criteria was that the statements should not be so specific as to be restricted to only natural scientists, specialists or wildlife enthusiasts. The statements were either basic information that had been hot issues in the past or much publicized current events. Four major observations were made based on the number/proportion of correct answers received.

First, the percentage of correct answers in the donors group was higher than for the general respondents. This partly supported the expectation that the donors would be more 'knowledgeable' than the average person in Bangkok, given the distinct difference in age, income and level of education highlighted earlier.

Secondly, there were some questions in which the percentages of correct answers were lower for both respondent groups. Among these was the statement "*The Irawaddy dolphin is in the list of Thailand's endangered species which is protected under CITES*". This was one statement of which a high percentage of correct answers was expected because apart from hosting the Conference of the Parties (COP)13, Thailand's proposal

and getting approval for the moving of the Irawaddy dolphin (*Orcaella Brevirostris*) from Appendix 2 to Appendix 1 of CITES (Convention of International Trade on Endangered Species) was a much publicized issue[12]. A high percentage of incorrect answers suggested that people did not, in general, closely follow the news about wildlife, and that there was limited interest in Thailand's role as a host country for a major international meeting as well as in efforts made to heighten protection for one of Thailand's endangered species.

Thirdly, there were answers which reflected that people might not be aware of the current status of or threats to certain wildlife species. For instance, people erroneously thought that animals such as rhinoceroses and kouprey could still be found in the wilds of Thailand.

Lastly, the possibility that the high percentages of correct responses was the result of successful guesswork could not be entirely dismissed. An example of where guesswork might have played a role is the statement that the dugong is a type of sea lion. Among the respondents who answered correctly that this was a false statement were those who knew this for a fact and those who may have just guessed it correctly.

There was also noted inconsistency between different sections of the questionnaire. Among the general respondents, only 27% answered correctly that elephants were among the populations that were declining in the wilds, yet 80% said that they had heard that elephants faced the risk of extinction (Table 9). Thus, the level of knowledge over wildlife situations may be lower than what is suggested in Table 8.

[12] CITES COP13 took place in Bangkok from October 2-14, 2004.

Table 8. Responses to knowledge index questions

Statements	Correct answer	Number of respondents who gave correct answers	
		Donors	General Respondents
Dugongs are mammals.	True	153 (98.7)	801 (95.4)
The Irawaddy dolphin is in the list of Thailand's endangered species which is protected under CITES.	True	48 (31.0)	485 (57.7)
Thailand is a member of CITES which is an international organization that seeks to control trade of wildlife.	True	142 (91.6)	756 (90.0)
Rhinos can still be found in Thailand.	False	94 (60.6)	361 (43.0)
Thung Yai Naresuan and Huey Kha Kaeng are wildlife sanctuaries located in the southern region of Thailand.	False	150 (96.8)	740 (88.1)
Elephants are not among the species heading towards extinction in Thailand.	False	116 (74.8)	231 (27.5)
International tourists come to Thailand to see the koupreys which can no longer be found anywhere else in Southeast Asia.	False	129 (83.2)	588 (70.0)
The dugong is a type of sea lion.	False	103 (66.5)	393 (46.8)
Tigers in Thailand face no risk of extinction.	False	146 (94.2)	784 (93.3)
Have you heard or do you know about Sueb Nakhasathien?	Yes/No	154 (99.4)	707 (84.2)

Notes: Donors N = 155; General Respondents N = 840. Figures in parenthesis are percentages of the sample groups.

4.2.4 Preferences and perceptions over the importance of wildlife and awareness of the risk of extinction

People's willingness to support conservation funds for endangered species can be influenced by their association of those species with various attributes. This study adopted the approach used by Czech and Krausman (1999) which asked respondents to indicate relative values of eight types of species, (namely birds, mammals, reptiles, amphibians, fish, plants, invertebrates, and micro-organisms) in relation to eight 'prioritization' factors. Here, respondents were asked to assess each of the six endangered species on five attributes which might influence their perceived importance. The scale ranged from 1 for 'least important' up to 10 for 'most important'. The attributes were (i) apparent ecological importance, (ii) cultural, historical and sentimental value, (iii) monetary value, (iv) being rare or facing the threat of extinction, or and (v) physical attractiveness [13] (Czech and Krausman 1999) (Table 9).

[13] For each animal, the enumerator would go through each of the attributes e.g., "*Consider the elephant in terms of ecological importance. On a score of 1 to 10, how important do you think the elephant is?"* The enumerators were instructed to explain what the attributes themselves meant and to advise that it was possible to give a score of '0' or "don't know" as an answer. No other additional information was given.

One of the factors which might affect decisions to contribute to conservation or wildlife is the knowledge of the risk of extinction. The results shown in the last row in Table 9 suggest that the majority of the respondents were aware that some of Thailand's relatively well-known wildlife species faced the risk of extinction. In the case of gibbons, however, the percentage of those being aware (56%) was notably lower.

Table 9. Perceived importance of wildlife by selected attributes and awareness of the risk of extinction

Attributes	Elephants	Dugongs	Tigers	Hornbills	Gibbons	Marine Turtles
Have apparent ecological importance	7.59 (2.62)	7.73 (2.85)	7.94 (2.49)	7.96 (2.70)	7.11 (2.72)	8.05 (2.54)
Have cultural, historical and sentimental value	8.93 (1.73)	6.15 (2.96)	6.77 (2.63)	6.24 (2.87)	5.83 (2.60)	6.35 (2.79)
Have monetary value	6.79 (2.66)	6.07 (3.01)	7.79 (2.56)	6.75 (2.85)	5.66 (2.78)	6.88 (2.77)
Are rare and near extinction	8.19 (1.96)	8.82 (1.97)	8.47 (1.96)	8.59 (2.08)	7.58 (2.38)	8.37 (1.99)
Have physical attractiveness and are cute	8.68 (3.66)	7.14 (2.78)	6.50 (2.75)	7.41 (2.59)	7.55 (2.31)	6.70 (2.68)
Average scores of the 5 attributes	8.03	7.19	7.5	7.4	6.76	7.29
Face the risk of extinction	669 (80.0)	686 (82.1)	615 (73.2)	640 (76.6)	470 (56.2)	683 (81.3)

Notes:
(1) General Respondents only, N = 840.
(2) For rows 1-5, the figures in parenthesis are standard deviation values.
(3) For the last row, the figures in parenthesis are percentages of the total number of respondents.

As with the Czech and Krausman (1999) and Tisdell and Wilson (2006) studies, which asked respondents to assess whether their knowledge of a particular species was 'poor', 'good' or 'very good', measurements under this exercise were arbitrary in the sense that scores were based on the respondents' judgments and prior knowledge. Like in the Tisdell and Wilson (2006) study, scores were used in a qualitative manner and not as cardinal measures which would require high levels of precision. The main objective here was to capture the general perceptions of the Bangkok population regarding the relative importance of the endangered wildlife species. This did not necessarily have to be in accord with the actual status, but information on what the general public knew or were aware of could be of value to policy-makers.

Based on the average scores of all five attributes, elephants were considered as being of highest importance (8), followed by tigers (7.5), hornbills (7.4), marine turtles

(7.3), dugongs (7.2), and lastly, gibbons (6.8). Comparing the ranking of each attribute revealed interesting variations. On the attribute 'cultural, historical and sentimental value', elephants had the highest score. This supports the observation that ethics, morality and social influences can contribute to the perceived likeability of a species (Tisdell and Wilson 2006). Marine turtles were rated as of highest importance in terms of 'apparent ecological importance' while dugongs were voted, out of the six, as the most important in terms of being 'rare and near extinction'. Probably based on perceptions of tradable economic value, tigers were rated the highest for 'monetary value' (7.8), followed by marine turtles (6.9). Elephants ranked third (6.8) due to their charismatic and economic value in the tourism industry as well as in the rather profitable business of walking elephants in the streets of Bangkok and other urban residential areas for well-intentioned urbanites to buy bananas to feed the elephant and make money for the *mahoots* (people who take care of the elephants) and the elephant owners.

For the pairing exercise where the 840 general respondents were asked to state their priority of allocation of public resources, the order of preferences was: (i) dugongs, (ii) hornbills, (iii) elephants, (iv) marine turtles, (v) tigers and (vi) gibbons. What this means is that every time the picture of a dugong was paired with another of the six animals, the majority of the respondents always chose to allocate conservation resources to the dugongs. In contrast, each time the picture of the gibbon was paired with another animal, the majority of the respondents always chose the other animal and not the gibbon. Between the most preferred and the least preferred were the four remaining animals. The hornbill in the second place suggests that although most respondents chose the dugong rather than the hornbill, between the hornbill and the four other animals, the majority of the people chose the hornbill.

The respondents' choices could have been conditioned by a combination of factors. At the lowest level of summation, the rankings may reflect nothing more than reactions to the photographs shown. One could interpret the above results to mean that the respondents simply liked the photograph of the dugong more than the other animal it was paired with. In contrast, we can say that most people liked the gibbon's photograph less than the photos of the other animals. At another level, it is also possible that the photographs shown served as mental links. In other words, the choices had nothing to do with the photographs per se, but were based on information the respondents may have already had or their pre-existing personal likes or dislikes for each animal. People might think, for example, that gibbons did not face as much risk of extinction based on prior notions of abundance because many people kept them as pets or because greater numbers of gibbons could be seen in zoos compared to the other five animals. Similarly, people might not perceive the importance of protecting wild tigers if they could be found in zoos or safari parks. A third possible interpretation, and one that would be valuable to policy-makers, is that in making the choices, the respondents were considering the trade-offs as requested. If this were the case, in looking at the photos of the dugong paired with the hornbill for example, the respondents would have asked themselves, "*Between the dugong and the hornbill, which animal would I prefer the government to allocate resources to protect?*" The allocation of resources to save one animal would be based on the understanding that this would mean fewer resources to save the other. If this were the

case, the results could be used as one aspect of information, in conjunction with other data, to support decision-making in prioritizing the allocation of resources.

4.2.5 Trust in usage of funds for wildlife protection and conservation

One factor that was expected to influence people's decision was the extent to which they believed the money donated would be used for whatever stated objectives. The respondents in both groups were asked to estimate what percentage of the money that people donated for the stated purposes actually reached the intended recipients. The results suggested that around 64% of the donors believed that 50% or more of the donations would be used for the stated purposes. Among these, as much as 25% believed that all the money reached the target recipients. By comparison, only 56% of the general respondents believed that 50% or more of the donation money reached the intended beneficiaries. However, among these, only 22% of this group believed that 80% of the money reached the intended target and only 8% thought that all the donations would be used as intended.

Table 10. Perceptions over percentage of donation funds being used for the stated purposes

Percentage of contribution being used for stated objectives	Donors	General Respondents
0-24	55 (35.5)	341 (40.6)
25	1 (0.6)	30 (3.6)
50	15 (9.7)	216 (25.7)
80	45 (29.0)	185 (22.0)
100	39 (25.2)	68 (8.1)

Notes: Donors N = 155; General Respondents N = 840. Figures in parenthesis are percentages of the total sample sizes.

4.2.6 Results from the experiment with real money

Field experiments with real money generated some interesting results. Table 11 below shows that very few people kept most of the 100 Baht given to them (4%) and around 19% kept 60 Baht and more. Forty-three percent (43%) of the total donation fund was for wildlife conservation and 41% for human-related charities. The difference in the proportion was too small to conclude that there was a slightly higher preference for wildlife causes. It indicated nevertheless, that there were no clear-cut preferences for human or wildlife charities.

Table 11. Frequency of givers to wildlife and human-related charities, Bangkok 2006

Amount of money Kept (Baht)	Frequency of respondents who kept the money	Frequency of givers to Green Box (wildlife)	Frequency of givers to Blue Box (socially disadvantaged)
0	620 (73.8)	98 (11.6)	125 (14.9)
20	37 (4.4)	125 (14.8)	131 (15.6)
40	22 (2.6)	339 (40.4)	246 (29.3)
60	103 (12.3)	193 (23.0)	285 (33.9)
80	23 (2.7)	8 (1.0)	9 (1.1)
100	35 (4.2)	77 (9.2)	44 (5.2)

Notes: The experiment was conducted only with the 840 general respondents. The figures in parenthesis are percentages of the sample groups.

4.3 Willingness to Pay for the Protection and Conservation of Wildlife

As stated earlier, after the enumerators had read out the CV scenario, the respondents were then asked whether or not they would be willing to pay specified amounts. The five bids used in the split samples were 100 Baht, 150 Baht, 250 Baht, 1,000 Baht and 3,000 Baht.

4.3.1 Distribution of samples by bids and payment vehicles

The information in Table 12 below confirmed a-priori expectations that willingness to pay was sensitive to bid prices. At the lowest bid of 100 Baht, over 80% of the respondents for each payment mechanism was willing to pay for the protection and conservation of the six wildlife species. As the bids increased, the percentages of 'Yes' responses declined. In the general respondents group, at the highest bid of 3,000 Baht, the percentages of 'Yes' responses reduced to 9% – 15% of the respondents in the split samples.

For the mandatory payment mechanism, the referendums which gained majority support were for the three lower bids. For the middle bid, which was a one-time payment of 250 Baht, 71% voted to support the referendum for the 'with' seed money option and 66% voted for the 'without' seed money option. At the higher bid price of 1,000 Baht, however, less than 50% of the respondents voted 'for' each of the referendums.

Overall, the results for voluntary contributions to fund both 'with' and 'without' seed and refund options were similar although the percentages of 'Yes' responses for

each bid level were lower than for the mandatory payment mechanism. At the lowest bid price, around 80% were willing to make voluntary contributions. At the middle bid of 250 Baht, the percentage dropped to around 50% and at the highest bid price of 3,000 Baht only, 9% – 15% of the samples in these groups were willing to pay.

For the 155 respondents in the donors group who responded only to voluntary contributions 'with' seed money and refund options, there were no significant changes in the percentages of 'Yes' responses which were around 92% as the bid price increased from 100 Baht to 150 Baht. At the highest bid of 3,000 Baht, the percentage of donors willing to pay was still high at about 58% while the percentages of 'Yes' responses for all other payment vehicles had dropped drastically; the highest being 14% for the mandatory payment 'with' seed money.

As mentioned earlier, 'No' responses to the specified bids were followed by open-ended questions on the amount that the respondents would be willing to pay. Of the 427 general respondents who initially said 'No' to the specific bid price offered, 71% said they would be willing to pay lower amounts. The sums ranged from 10 Baht up to 2,000 Baht and around 35% said they would be willing to make a one-time payment of 100 Baht[14]. A follow-up question was asked on why the respondent voted against the specific referendum (each respondent was given one bid price for one payment vehicle only) or why he/she was not willing to pay. The most common answer (56%) was not being able to afford the amount.

[14] When we asked the 464 respondents (general respondents and donors) who originally said 'No' to the bid amounts they were presented with how much they would be willing to pay, 303 out of these said they would pay a lower amount. The mean WTP for the 303 respondents who would be willing to pay other bid amounts was 298 Baht; the standard deviation was 360.8; and the mode and median was 100 Baht.

Table 12. The number of respondents willing to pay different bid prices

Bid (Baht)	Mandatory Tax (General Respondents)		Voluntary Contribution (General Respondents)		Donors (with seed money and refund)
	With seed money N = 229	Without seed money N = 196	With seed money and refund N = 219	Without seed money and refund N = 196	N = 155
100	34 (89.47)	32 (80.0)	32 (80.0)	32 (80.0)	24 (92.3)
150	30 (75.00)	29 (74.36)	22 (56.4)	23 (60.5)	26 (92.8)
250	27 (71.1)	27 (65.9)	22 (56.4)	21 (53.9)	30 (81.0)
1,000	20 (36.4)	13 (34.2)	18 (33.3)	9 (23.1)	19 (61.3)
3,000	8 (13.8)	4 (10.53)	4 (8.51)	6 (15)	19 (57.5)

Notes:
(1) The figures in parenthesis are percentages of 'Yes' responses by the stated number of respondents in each split sample.
(2) Number of respondents in the general respondents mandatory tax (with seed money) sample: 100 Baht N=38; 150 Baht N=40; 250 Baht N=38; 1,000 Baht N=55; 3,000 Baht N=58.
(3) Number of respondents in the general respondents mandatory tax (without seed money) sample: 100 Baht N=40; 150 Baht N=39; 250 Baht N=41; 1,000 Baht N=38; 3,000 Baht N=38.
(4) Number of respondents in the general respondents voluntary contribution (with seed money and refund) sample: 100 Baht N=40; 150 Baht N=39; 250 Baht N=39; 1,000 Baht N=54; 3,000 Baht N=47.
(5) Number of respondents in the general respondents voluntary contribution (without seed money and refund) sample: 100 Baht N=40; 150 Baht N=38; 250 Baht N=39; 1,000 Baht N=39; 3,000 Baht N=40.
(6) Number of respondents in the donors voluntary contribution (with seed money and refund) sample: 100 Baht N=26; 150 Baht N=28; 250 Baht N=37; 1,000 Baht N=31; 3,000 Baht N=33.

Several statements could be treated as 'protest votes' as they reflected mistrust in the payment mechanism as well as uncertainty about the expected outcome. Table 13 shows that 25 respondents were not convinced that the money would be used for the stated objectives while six thought that they were not sure that the institutional support could really be set up.

After removing 31 protests votes from the sample (28 general respondents and 3 donors), the total sample size (general respondents and donors combined) was reduced to 964 samples (Table 14). The protest votes relate to the statements shown in bold in Table 13. The willingness to pay responses in Table 14 show that the majority of the respondents would still be willing to pay for the three lowest bids.

Table 13. Reasons for answering 'No' to the WTP question

Reasons	Number of respondents	% of those who answered 'No'
Cannot afford the amount	90	55.9
Not sure that the money will be used for the stated objectives	**25**	**15.5**
The contribution is unlikely to have much impact	9	5.6
Do not like the compulsory nature of the program	13	8.1
The planned activities are unlikely to generate the expected results	9	5.6
Not sure that the institutional support can really be set up	**6**	**3.7**
It should be the responsibility of the government	5	3.1
It is not an immediate problem and concern	4	2.5

Note: The total number of 'No's = 161 respondents. The total number who said 'No' initially was 464 (427 general respondents and 37 donors). Then after asking whether they were certain about saying 'No', only 161 respondents said they were. Multiple responses were allowed.

Table 14. The number of respondents willing to pay the different bid prices (protests votes removed)

Bid (Baht)	Mandatory Tax		Voluntary Contribution		Donors (with seed money and refund) (N = 152)
	With seed money N = 224	Without seed money N = 188	With seed money and refund N = 211	Without seed money and refund N = 189	
100	34 (89.5)	32 (82.1)	31 (81.6)	30 (78.9)	23 (92)
150	30 (75.0)	25 (71.4)	19 (52.8)	23 (60.5)	26 (93)
250	27 (72.9)	27 (65.9)	22 (56.4)	19 (51.4)	29 (81)
1,000	20 (37.7)	13 (36.1)	17 (32.7)	9 (23.7)	19 (61)
3,000	8 (14.3)	4 (10.8)	4 (8.7)	5 (13.2)	18 (56)

Notes: N = 964. The figures in parenthesis are percentages of 'Yes' responses by the number of respondents in each split sample.

Respondents who were 'uncertain' were treated as 'No's in the analysis. The most common reason underlying the uncertainty, similar to why the respondents answered 'No', was the sum of the one-time payment. Much of the uncertainty was also related to the institutional set-up to implement the project. Around 27%, for example, thought that the implementing organization should be set up first while another 25% were concerned about the transparency of the implementing organization (Table 15).

Table 15. Reasons for answering 'Uncertain' to the WTP question

Reasons	Number of respondents	% of those who answered 'Uncertain'
The sum requested is too high	140	46.2
Not sure about the transparency of the implementing organization	77	25.4
The implementing organization need to be set up first	82	27.1
It should be the responsibility of the government	2	0.7
Would rather help people first	2	0.7

Note: The total number of 'uncertain' respondents = 303 from the total of 995 respondents (both donors and general respondents).

For those whose decision was to vote 'for' the referendums or to voluntarily pay, the common reasons were because they wanted to support the effort and that the sum requested was not too high (Table 16). The necessity of having a fund to support conservation activities was the third most common response.

Table 16. Reasons for answering 'Yes' to the WTP question

Reasons	Number of respondents	% of those who answered 'Yes'
Want to support the effort	339	63.8
The sum requested is not too high	116	21.9
Think that having a fund is important	71	13.4
It is our responsibility to help	3	0.6
Want the public sector to help	2	0.4

Note: Both donors and general respondents combined, N = 531

4.3.2 Factors influencing willingness to pay

The analysis of the factors that influenced willingness to pay was done by using multivariate logistic regression. In addition to the demographic variables, the logit model included two behavioural variables such as 'Kindex' (knowledge index) which was the number of correct answers from the true or false statements about wildlife discussed earlier. The other variable was 'Trust' which reflected the respondents' perceptions over the percentage of the donated money that would be used for the stated objectives[15]. The variables, descriptions and expected signs are shown in Table 17.

[15] Information on 'Kindex' and 'Trust'' are in Tables 8 and 10 respectively.

Table 17. Variable descriptions, means, standard deviations and expected signs

Variable	Description	Expected sign
Age	Years	+
Gender	1 = male; 0 = otherwise	+
Education	No. of years of schooling	+
Marital status	1 = married; 0 = otherwise	N.A.
Children	Number of children	-
Kindex	Scores from 10 knowledge questions	+
Trust	The percentage of the donations that respondents believed would be used by the campaigning organization/s for the stated cause/s	+

The results of the multivariate logistic regressions shown in Table 18 conformed with theoretical expectations. The estimation parameters for the bids were significant at the $p<0.01$ significance level. Consistent with the economic theory of demand, the probability of a 'Yes' answer to the WTP question was inversely related to the bid price. At high bid prices, respondents were less likely to vote 'for' the referendums or be willing to pay the bid amounts to support the Wildlife Protection and Conservation Fund.

There was some variability in the results of the logit models for the different payment mechanisms. The coefficients of the income variable were positive and significant at $p<0.01$ for the mandatory tax pooled, voluntary contribution pooled and all pooled samples. The income variable for the voluntary contribution with seed money and refund was also significant at $p<0.01$. For the mandatory tax with seed money and pooled samples of general respondents, the income variables were significant at $p<0.05$.

For the mandatory tax payment 'with' seed money option, the 'expenditure' variable was used instead of 'income'. The variable was significant at $p<0.05$ and had a negative coefficient sign indicating that the higher the expenditure, the lower probability of willingness to pay.

As expected, the coefficients for the variable 'Trust' were positive and significant in all the logit models with the exception of the mandatory tax payment vehicles. This implied that the more trust people had that the money donated would be used for the purpose it was asked for, the higher the probability that respondents would vote 'for' the referendums or answer 'Yes' to the willingness to pay question in the voluntary payment mechanisms.

In addition to the pooled samples for the mandatory tax payment vehicle and the voluntary contribution, additional tests were done to test the payment vehicle effects for two additional pooled samples. One was for all the general respondents and the other was for all the general respondents and donors. Payment vehicles were included as dummy variables, and only PV2 (mandatory tax 'without' seed money) was significant suggesting that there was a higher probability of a positive response to the WTP question if posed as a mandatory tax without the seed money feature than as a voluntary contribution to a trust fund. In the pooled sample model with both the general respondents and donors (shown in the last column of Table 18), there was a higher

probability of respondents saying 'Yes' to both the mandatory tax 'without' seed money and the voluntary contribution 'with' seed money and refund option than to the mandatory tax 'with' seed money and voluntary contribution 'without' seed money and refund options.

Table 18. Logistic regression results for determinants of willingness to pay

Variables	Mandatory Tax			Voluntary Contribution			Pooled General Respondents N=812	All pooled samples N=964
	with seed money N=224	w/o seed money N=188	pooled tax N=412	with seed money & refund N=211	w/o seed money & refund N=189	pooled fund N=400		
Bid	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Age	-0.030 (0.029)	-0.077*** (0.024)	-0.044*** (0.015)	0.009 (0.011)	0.000 (0.017)	0.010 (0.010)	-0.013 (0.008)	-0.003 (0.008)
Gender	0.299 (0.467)	-0.012 (0.377)	0.139 (0.244)	0.016 (0.257)	0.464 (0.352)	0.147 (0.203)	0.339** (0.167)	0.163 (0.153)
Marital status	0.009 (0.596)	0.428 (0.504)	0.051 (0.326)	-0.174 (0.331)	0.703 (0.513)	-0.034 (0.268)	-0.024 (0.226)	-0.014 (0.202)
Children	0.304 (0.247)	0.052 (0.173)	0.156 (0.122)	0.083 (0.134)	-0.551** (0.230)	-0.083 (0.111)	0.063 (0.086)	0.014 (0.078)
Education	0.192** (0.083)	-0.080 (0.064)	0.010 (0.044)	0.023 (0.040)	-0.046 (0.058)	0.009 (0.032)	0.012 (0.026)	0.032 (0.025)
Income	Expenditure -0.000** (0.000) a/	0.000** (0.000)	0.296*** (0.103)	0.000*** (0.000)	0.000 (0.000)	0.000*** (0.000)	0.000** (0.000)	0.000*** (0.000)
Kindex	-0.038 (0.147)	0.018 (0.134)	-0.095 (0.088)	0.210** (0.097)	-0.118 (0.118)	0.077 (0.073)	-0.030 (0.058)	0.023 (0.054)
Trust	0.009 (0.007)	-0.005 (0.006)	0.004 (0.004)	0.015*** (0.004)	0.011** (0.005)	0.014*** (0.003)	0.007*** (0.002)	0.010*** (0.002)
PV1	-	-	-	-	-	-	0.217 (0.246)	0.105 (0.240)
PV2	-	-	-	-	-	-	0.526** (0.237)	0.435** (0.231)
PV3	-	-	-	-	-	-	0.030 (0.233)	0.442** (0.212)
Constant	0.409 (2.021)	4.786 (1.689)	2.169 (1.043)	-2.311 (0.864)	1.494 (1.232)	-1.194 (0.677)	0.543 (0.627)	-0.614 (0.565)
Pseudo R2 Cox & Schnell	.282	.300	.288	.270	.254	.249	.257	.247
Nagellkerke	.395	.400	.384	.363	.339	.333	.343	.330

Notes:
(1) *** = significant at p<0.01, ** = significant at p<0.05 and * = significant at p<0.1
(2) a/ Expenditure is used as an income proxy for this variable.
(3) PV1 = mandatory tax 'with' seed money; PV2 = mandatory tax 'without' seed money; PV3 = voluntary contribution 'with' seed money and refund; and PV4 = voluntary contribution 'without' seed money and refund (as PV4 is used as the base case, it is not shown in this computerised SPSS output).

4.3.3 Mean willingness to pay (MWTP)

The parametric approach was used to estimate the mean and median WTP. The mean WTP was estimated using the formula:

$$\text{Mean WTP} = -\frac{\alpha}{\beta}$$

where β is the coefficient on the bid amount and α is the estimated constant. Table 19 shows the estimation of the MWTPs per household (hh) for the uncensored data set both in Baht and USD using the parametric and non-parametric methods. The MWTP was the highest for the mandatory payment mechanism; the mandatory tax 'with' seed money option was 1,047 Baht/hh equivalent to a one-time payment of around 31 USD/hh. Without the seed money feature, the MWTP was 878 Baht/hh or around 26 USD/hh. For the voluntary payment mechanism, MWTPs for funds 'with' and 'without' the seed money and refund option were almost the same at 618 Baht/hh and 627 Baht/hh, respectively (approximately 18 USD/hh). The MWTP values estimated after removing the 28 'protest' votes from the general respondents group are shown in Table 20.

Table 19. Mean willingness to pay estimates (uncensored)

Payment Mechanisms	**MWTP Baht/hh**		**MWTP (USD/hh)**	
	Parametric values	**Non-parametric values**	**Parametric values**	**Non-parametric values**
Tax with seed money (N = 229)	1,047	752	31	22
Tax without seed money (N = 196)	878	652	26	19
Voluntary contribution with seed money and refund (N = 219)	618	584	18	17
Voluntary contribution without seed money and refund (N = 196)	627	637	18	18
Pooled tax (N = 425)	972	706	29	20
Pooled voluntary contribution fund (N = 415)	621	611	18	18
Total pooled sample (N = 840)	1,051	660	31	19

Notes: Exchange rate @ 34 Baht to 1 USD; hh = household

Table 20. Mean willingness to pay estimates (protests votes removed)

Payment Mechanisms	MWTP Baht/hh		MWTP (USD/hh)	
	Parametric values	Non-parametric values	Parametric values	Non-parametric values
Tax with seed money (N = 224)	1,091	769	32.1	22.6
Tax without seed money (N = 188)	901	670	26.5	19.7
Voluntary contribution with seed money and refund with seed (N = 211)	598	583	17.6	17.2
Voluntary contribution without seed money and refund (N = 189)	575	601	16.9	17.7
Pooled tax (N = 412)	1,006	728	29.6	21.4
Pooled voluntary contribution fund (N = 400)	586	594	17.2	17.5
Total pooled sample (N = 812)	802	662	23.6	19.5

Note: Exchange rate @ 34 Baht to 1 USD

4.3.4 Payment vehicle effect tests

One of the objectives of this study was to analyse the impacts of the payment vehicles on the decision to pay or not to pay. The study also aimed at analyzing whether or not the inclusion of specific features of the funds mobilizing campaign would increase the likelihood of respondents being willing to pay. The results of the tests run are given in Table 21 and discussed below.

a. Mandatory vs. voluntary payment mechanism

The study determined whether the payment mechanism would have an effect on the willingness to pay. Would respondents react differently to mandatory and voluntary payment mechanisms? A dummy variable *'pvehicle'* was included in the logit model (mandatory = 1; voluntary = 0). The variable *pvehicle* was significant at the $p<0.05$ level and the coefficient sign was positive. This meant that there was a higher probability of respondents being more willing to pay to a mandatory rather than a voluntary payment mechanism and also being willing to pay more in such a case (Table 21). In Table 19, the MWTP for the pooled tax sample was 972 Baht/hh, significantly higher than the MWTP of 621 Baht/hh for the pooled sample for the voluntary contribution to a fund. In Table 20, with protest votes removed, the MWTP for the two payment vehicles for the pooled samples were 1,006 Baht/hh (approximately 30 USD) and 586 Baht/hh (17 USD), respectively.

Table 21. Logistic regression results for the payment vehicle tests

Variable	Mandatory tax vs voluntary contribution (1)	Mandatory tax with seed money vs without seed money (2)	Voluntary contribution with seed money and refund vs without seed money and refund (3)
Pvehicle (1), s_ tax (2), s_fund (3)	0.372** (0.170)	-0.277 (0.239)	0.090 (0.233)
Age	-0.015 (0.008)	-0.037*** (0.014)	-0.000 (0.010)
Gender	0.343** (0.165)	0.150 (0.240)	0.522** (0.235)
Married2	-0.0333 (0.223)	0.071 (0.323)	-0.046 (0.320)
Children	0.065 (0.084)	0.187 (0.121)	-0.046 (0.128)
Educa	0.011 (0.026)	0.050 (0.041)	-0.026 (0.035)
Income	0.000** (0.000)	0.000 (0.000)	0.000** (0.000)
Bid	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Constant	0.715 (0.487)	1.614 (0.853)	0.496 (0.641)
Pseudo R2 Cox & Schnell	0.247	0.275	0.228
Nagellkerke	0.329	0.368	0.305

Notes:
(1) Mandatory tax N = 412; Voluntary contribution N = 400
(2) Mandatory tax with seed money N = 224; Mandatory tax without seed money N = 188.
(3) Analysis does not include donors; Voluntary contribution with seed money & refund N = 211; Voluntary contribution without seed money & refund N =189.
(4) *** significant at p<0.01, ** significant at p<0.05 and * significant at p<0.1

b. Mandatory tax 'with' vs. 'without' seed money

A second hypothesis was whether the MWTP for the mandatory payment mechanism 'with' seed money would be statistically different from the 'without' scenario. Column 2 of Table 21 shows the results of the regession of the logit model with a dummy variable 's_tax' (with = 1; without = 0). The MWTP for tax with seed money using the parametric method was 1,091 Baht while the MWTP for tax without seed money was 901 Baht/person (Table 20). Using the non-parametric method, the MWTPs were respectively 769 Baht/hh and 670 Baht/hh. The difference between both, however, was not statistically significant, hence, the decision to answer 'Yes' or 'No' was not influenced by the seed money feature of the funds mobilization campaign.

c. Voluntary contribution 'with' vs. 'without' seed money and refund option

Similarly, a test was run to determine whether the MWTP would be statistically different with the inclusion of the seed money and refund option in the voluntary

payment mechanism. The dummy variable in this logit model was 's_fund' (with = 1; without = 0). The results in Table 21 show that there was no significant difference in the MWTPs. Referring back to Table 20, the parametric estimates for MWTPs were quite close at 598 Baht/hh in the 'with' seed and refund case and 575 Baht/hh for the 'without' while the non-parametric estimates were respectively 583 Baht/hh and 601 Baht/hh. Thus, the inclusion of seed and refund options did not have the expected impact of increasing the probability of willingness to pay.

4.3.5 Extrapolation of WTP benefits

The extrapolation of WTP benefits was done using the values of the MWTP for the pooled voluntary and mandatory payment mechanisms, the latest 2006 population statistics of Bangkok and the number of taxpayers in the different income groups.

Under the voluntary payment mechanisms, based on the MWTP for a one-time payment of 586 Baht/hh (Table 20) and Bangkok's population of 2,150,706 households (NESDB 2006), the potential funds that can be mobilized is 1,260 million Baht or approximately 37 million USD[16].

Table 22. Total willingness to pay

Voluntary Contribution		**Mandatory Tax**	
MWTP (Baht/hh)	586	Highest bid passing referendum (Baht/hh)	250
Total number of hhs in Bangkok	2,150,706	Total number of taxpayers in Bangkok	2,268,902
		Total number of hhs paying (assuming 2 tax payers/hh)	1,134,451
Total sum (mil. Baht)	1,260	Total sum (mil. Baht)	284
Total sum (mil. USD)	37	Total sum (mil. USD)	8.4

Note: A referendum is deemed to have 'passed' if the majority of respondents vote for it.

Under the mandatory payment vehicle, the MWTP for the pooled sample was 972 Baht/hh (Table 19). Were the referendum to have passed at the bid price of 1,000 Baht, then it would have been possible to use the MWTP for that price to extrapolate that the potential funds that could be mobilized under the mandatory payment mechanism. As seen in Table 12, however, the referendum only passed for the three lower bids; the highest bid price being only 250 Baht. Given that the referendum passed at 250 Baht and assuming that there are two tax payers per household on average and that only one taxpayer per household were to pay, 1.13 million households (from the current 2.26 million Bangkok taxpayers) would pay this one-time payment and the potential mobilizable sum would be 284 million Baht or 8.4 million USD.

[16] Exchange rate used: 34 Baht to 1 USD

5.0 CONCLUSIONS AND RECOMMENDATIONS

The aim of this study was to examine the motivations for charitable behaviour of private contributors towards the conservation of specific endangered wildlife of Thailand. In addition, the study used the contingent valuation method to estimate such non-use values as well as to test the responsiveness of the Bangkok population to incentives included in the different payment vehicles.

The results confirmed that the regular contributors to wildlife protection and conservation measures belonged to the somewhat more affluent socio-economic group. There were also significant differences in terms of age, level of education, perceptions and attitudes over the wildlife sector.

The results of a multivariate logit analysis showed that there was a significant payment vehicle effect. There was a higher probability that respondents would answer 'Yes' to the valuation question for the mandatory rather than the voluntary payment mechanism. Respondents were willing to pay a higher one-time payment of 1,006 Baht compared to 586 Baht for a voluntary payment.

Unlike experiences in developed countries where studies have shown the positive influence of incentives included in payment mechanisms, the results of this study showed that for both the mandatory and voluntary payment mechanisms, the inclusion of features such as seed money and refund options did not have the intended effect of sending out signals of the credibility of the funds mobilization campaign and increasing the probability of willingness to pay. There were no significant statistical differences between the MWTPs for mandatory tax 'with' and 'without' seed money and between the MWTPs for the voluntary contributions 'with' and 'without' the seed money and refund option.

The results of the multivariate analysis revealed that 'Bid' and 'Income' were significant determinants of willingness to pay. A variable which was also found to be significant determinant was the level of 'Trust' or prior perceptions people had over the percentage of contributions that would be used for the stated objectives. There were variations in the influence of attitudinal variables in the logit models for the different payment mechanisms with no clear-cut relationship between attitudes and willingness to pay.

Finally, the CVM was used in this study to estimate the willingness to pay for a group of Thailand's endangered species rather than for all endangered wildlife or a specific endangered species. Policy-wise, the results suggest that a mandatory payment mechanism has a higher probability of obtaining public support. The results also indicate that it is likely that most people would accept an income tax surcharge at a bid price of 250 baht. In this case, the total sum that could be mobilized would be 8.4 million USD. This is no small sum taking into consideration normal conservation budgets. In 2007, for example, the budget allocated to the Wildlife Conservation Office under the National Park, Wildlife and Plant Conservation Department was 407 million Baht or around 12 million USD whereas the budget for the Department of Marine and Coastal Resource was

only 45.16 million Baht or 1.33 million USD. Funds for specific endangered species represented even smaller fractions of both departments' budgets. Therefore, the sum that could be raised from a mandatory income tax surcharge of only 250 Baht per household could sufficiently finance a comprehensive and integrated programme on the conservation of the six endangered terrestrial and marine species covered in this study. It is thus recommended that policy-makers and parties involved in wildlife conservation seriously consider the findings of this study in future plans to raise funds to save Thailand's endangered species.

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